

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 P.M., E.D.T., MAY 19, 1976

(202) 426-8787

ISSUED: May 19, 1976

Forwarded to:

Honorable Norbert T. Tiemann
Administrator
Federal Highway Administration
400 Seventh Street, S. W.
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)

H-76-16

The National Transportation Safety Board has investigated five ^{1/}major highway accidents involving commercial vehicles in which semitrailers have become separated from their tractors during rollover. In each case, the units separated because either the fifth-wheel assembly or its attachment to the tractor frame failed. These accidents caused 32 fatalities and considerable property damage. In each case, both the tractor and the semitrailer started to overturn as a unit while the combination was turning. In all but one case, the tractor returned to its wheels after the combination vehicle separated.

The Safety Board believes that it is important to prevent separation of a combination vehicle because if the tractor remains attached to the semitrailer during a rollover, the tractor will resist the overturn. The tractor's low center of gravity reduces the unit's center of gravity and, consequently, the probability that it will overturn, by 10 to 20 percent. The fact that the tractors in these accidents returned to their wheels after the combinations separated indicates that the tractors were resisting upset of the combination as a whole. It is also important to prevent

^{1/}"Multiple-Vehicle Collisions Under Fog Conditions, Followed by Fires, New Jersey Turnpike North of Gate 2, November 29, 1969," NTSB-HAR-71-3; Liquid Transport, Inc., Tractor-semitrailer (Tank) Overturn With Passenger Car Involvement, I-65, Near Lafayette, Indiana, August 8, 1973 (no report issued); "Francisco Flores Truck/Pickup Truck With Camper and Trailer Collision, U. S. Route 395, Bishop, California, June 29, 1974," NTSB-HAR-75-5; Surtigas Co. Tank Truck Overturn and Explosion, U. S. Route 277, Eagle Pass, Texas, April 29, 1975 (report to be issued); and Southern Maryland Oil Company Truck Overturn and Fire, I-495 (the Capital Beltway), Near Phelps Corner, Maryland, October 29, 1975 (report to be issued).

separation of a combination because when the tractor and semitrailer separate and follow different trajectories, they create two areas of accident involvement.

The Board also has investigated seven tractor-semitrailer accidents in which the attachment did not fail when the unit turned over.^{2/} These accidents illustrate that there are fifth-wheel designs and mountings available which are capable of maintaining their attachment integrity during rollover.

During a rollover environment the forces on the tractor-semitrailer attachment are applied slowly. The fact that these rollovers occurred without separation indicates that the magnitude of these forces are well within design capability of fifth wheels. A technically feasible and practical fifth wheel must accommodate the loading couple which results from the overturn force, which acts upon the trailer's high CG, and from the resisting force afforded by the tractor's low CG. Additionally, a lateral force in the direction of the overturn is imposed on the fifth wheel and this force must be resisted.

Generally, fifth-wheel designs which maintain their integrity during rollover employ fixed, fore-and-aft, fifth-wheel positioning; crossframe mounting plates bolted to tractor frame attachment angles; and continuous fifth-wheel trunnion cross-shafts.

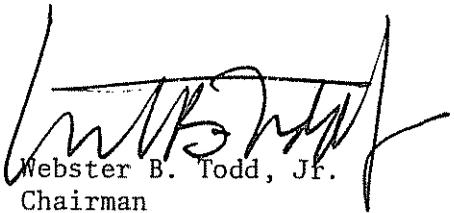
Therefore, the National Transportation Safety Board recommends that the Federal Highway Administration:

Develop information regarding both the initiation of rollover and the severity of tractor-semitrailer rollover accidents. If this information supports the Board's belief that combinations should remain attached so that they can resist overturn and so that the consequences of a rollover will be less severe, revise 49 CFR (b)393.70 to reflect the following:

^{2/}Flint, Michigan, May 12, 1969 (no Board report issued); Alexandria, Virginia, June 16, 1970, Tractor-semitrailer (no Board report issued); "Tank-Truck Combination Overturn Onto Volkswagon Microbus, U. S. Route 611, Moscow, Pennsylvania, September 5, 1971," NTSB-HAR-72-6; "Propane Tank Tractor-semitrailer Fire Resulting from Run-Off and Overturn, U. S. Route 401, Lynchburg, Virginia, March 9, 1972," NTSB-HAR-73-3; "Multiple Vehicle Collision Followed by Propylene Tank Truck Explosion, New Jersey Turnpike, North of Gate 8, September 21, 1972," NTSB-HAR-73-4; "Hoppy's Oil Company Jackknife/Overturn and Fire, Massachusetts State Route 128, Braintree, Massachusetts, October 18, 1973," NTSB-HAR-74-4; "George Wollman Meats Truck/Auto/Greyhound Bus, New Jersey Turnpike, Bordentown, New Jersey, October 19, 1973," NTSB-HAR-75-3.

Require that all fifth wheels and their attachments to tractor frames which are manufactured after January 1, 1978, be upgraded to insure that they can resist tractor-semitrailer separation during rollover. (H-76-16) (Class III, Longer-Term Followup)

TODD, Chairman, McADAMS, BURGESS, HALEY, and HOGUE, Members, concurred in the above recommendation.

By:  Webster B. Todd, Jr.
Chairman

THIS RECOMMENDATION WILL BE RELEASED TO THE PUBLIC ON THE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THE INFORMATION CONTAINED THEREIN SHOULD BE MADE BEFORE THAT DATE.

